

REMARKS

Claims 28 and 29 stand objected to because of a typographical error. Claims 36 and 42 are rejected under 35 U.S.C. §102(e) over the reference of Karabinis (U.S. Patent No. 5,937,322).

Claims 1, 6 and 16 are rejected under §103 over the combination of Karabinis as modified by Seumitsu (U.S. Patent No. 5,628,049). Claims 2, 3, 10-13, 17, 18, 21-24 and 26-30 are rejected under §103(a) over the reference of Karabinis and Seumitsu as modified by Kawano et al. (U.S. Patent No. 5,661,788).

Claims 4, 5, 7-9, 14, 15, 19, 20, 25 and 31-35 are rejected under §103(a) over Karabinis/Seumitsu/Kawano et al. as further modified by Karabinis et al. (U.S. Patent No. 6,134,437).

Claims 37, 38, 43 and 44 are rejected under §103(a) over Karabinis '332/Seumitsu. Claims 39, 40, 45 and 46 are rejected under §103(a) over Karabinis '332/Kawano et al. as further modified by Karabinis et al. '437. Claims 41 and 47 are rejected under §103(a) over Karabinis.

CLAIM OBJECTIONS

Claims 28 and 29 are objected to because of a typographical error. That typographical error has been corrected. Accordingly, the objections should be withdrawn.

SECTION 102 REJECTIONS

Claims 36 and 42 are rejected under 35 U.S.C. §102(e) as being anticipated by Karabinis '332. However, both independent claims 36 and 42 have been amended to more specifically recite the invention and are not anticipated by Karabinis '332.

Specifically, claim 36 recites a method including the steps of downconverting the satellite signal to an intermediate frequency (IF) signal, and upconverting the IF signal to produce an unlicensed frequency signal. The method further includes retransmitting the unlicensed frequency signal into the structure and receiving the unlicensed frequency signal in the structure, downconverting the unlicensed frequency signal to a second IF signal, and then upconverting the second IF signal to produce a second satellite signal that is retransmitted inside the structure. The Karabinis reference shows a satellite telecommunications repeater. However, as illustrated in Figure 3 and discussed in the Detailed Description of the references, there is absolutely no teaching with respect to downconverting a satellite signal to an IF signal, which is then upconverted to a signal at an unlicensed frequency. Nor is there any teaching with respect to retransmitting and receiving the unlicensed frequency signal to be downconverted to a second IF signal, and then upconverted to produce a second satellite signal that is transmitted inside a structure.

Claim 42 similarly recites a repeater system that includes a primary repeater with a circuit for downconverting a satellite signal to an IF signal and converting the IF signal to produce an unlicensed frequency signal, which is then received by a secondary repeater, downconverted to an IF signal, and then upconverted to produce a second satellite signal.

As such, the Karabinis '332 reference clearly does not teach each and every one of the elements recited in claims 36 and 42 and, thus, cannot anticipate those claims under §102(e). Accordingly, the §102 rejection should be withdrawn.

SECTION 103 REJECTIONS

Rejections of claims 1, 6 and 16 over Karabinis '332 and Seumitsu

Independent claim 1 has been amended, as has independent claim 16. The Examiner cites to Karabinis '332 as a satellite repeater, but clearly recognizes that Karabinis '332 is completely silent with respect to a method of retransmitting a GPS signal inside of a structure. Rather, it is simply directed to satellite telecommunications. The Examiner then cites to Seumitsu stating that the Seumitsu reference discloses retransmitting a satellite signal including a GPS signal. However, there is absolutely no teaching in Seumitsu with respect to transmitting or retransmitting a GPS signal.

Specifically, the Examiner cites to column 12, lines 56-63 in the Seumitsu reference. That language does not in any way discuss modifying the Karabinis '332 system to downconvert a GPS signal to an IF signal, amplify and filter it and then upconvert it to yield an RF signal for retransmission inside the structure for the purpose of a GPS repeater. That language in the Seumitsu reference regarding GPS only states that the terminal 7 of the reference includes a navigation system such as a GPS system that would utilize a satellite. However, a system that includes a GPS system in no way teaches or suggests processing of a GPS signal with frequency conversion for the purpose of retransmission of a GPS signal.

For example, in traditional hand-held GPS units, which give location information, the units do not transmit a GPS signal or any signal that could be considered a retransmission of the GPS signal. A typical GPS system, such as that recited in the Seumitsu reference, receives a series of signals from a satellite and then utilizes those signals to calculate a position. The Seumitsu reference teaches a mobile terminal, which might have that capability of a location or navigation system, much the same way

a car or a cell phone might have that capability. The terminal may have a GPS receiver to calculate position of the terminal, but it would not retransmit the information. Nor is there any suggestion or motivation in one sentence of Seumitsu to somehow modify the base reference to retransmit an RF signal reflective of a GPS signal into a structure. It does not in any way teach the concept of a repeater for retransmitting or repeating a GPS signal inside a structure. A person of ordinary skill in the art would recognize the GPS system as a navigation system that essentially calculates position. A person of ordinary skill in the art would not understand the Seumitsu reference to teach retransmission of a GPS signal inside a structure to be received by some other unit. In the Seumitsu reference, the mobile satellite terminal is the endpoint for the information of the GPS system, as is conventional. It would be no different than a hand-held GPS unit that does not retransmit. Accordingly, the combination of Karabinis '332 and Seumitsu could not teach a person of ordinary skill in the art to adapt the Karabinis '332 system with the teaching of Seumitsu to yield the invention, as recited in claims 1 and 16.

Again, there is no teaching in the base reference of Karabinis '332 regarding the concept of downconverting a GPS signal to an IF signal, amplifying and filtering the IF signal, and then upconverting the IF signal to produce an RF signal. The Karabinis reference simply amplifies the signal and retransmits it. There is no up and down conversion from the IF realm.

Secondly, the Seumitsu reference is completely silent with respect to the conversion and processing of a GPS signal such that an RF signal, reflective of a GPS signal, is retransmitted. Therefore, claims 1, 6 and 16 are clearly not properly rejected

as obvious over the Karabinis '332/Seumitsu combination, and are allowable over that combination.

Rejection of Claims 2, 3, 10-13, 17, 18, 21-24 and 26-30

Each of the above-noted claims are rejected under the Karabinis '332/Seumitsu reference as further modified by Kawano et al. As noted by the Examiner, the Kawano et al. reference is cited for disclosing amplification of an RF signal, which includes downconversion to IF, filtering of the IF, and upconversion back to RF. The Kawano et al. reference is directed to a high frequency signal booster. There is no discussion in Kawano et al. with respect to repeating a GPS signal. As such, the Kawano et al. reference provides no teaching of the elements lacking in the combination of base references Karabinis '332 and Seumitsu, discussed above with respect to independent claims 1 and 16. Therefore, the three reference combination cannot render obvious claims 1 and 16. As such, the remaining dependent claims 3, 18, 21, and 22, which depend from one of these independent claims, are also in an allowable form for the reasons discussed above.

Other claims of the rejected group, including claims 10, 23 and 27 are independent claims, as well. Claims 10-13 all include the steps of receiving a GPS signal, downconverting the GPS signal to an intermediate frequency signal, amplifying the IF signal, and then upconverting the IF signal to a second GPS signal to be retransmitted inside the structure. The Karabinis '332/Seumitsu combination does not in any way teach the downconversion of a GPS signal to an IF signal, amplification of the IF signal, and then upconversion to a second GPS signal to be retransmitted inside a structure. The Karabinis '332 reference is completely silent regarding downconversion

to IF and then upconversion. Furthermore, the Seumitsu reference only refers to GPS as a navigational system for a terminal much like a handheld GPS system.

There is no motivation in the Seumitsu reference with respect to somehow modifying the Karabinis '332 system, and there is no teaching as to how any modification would occur. Seumitsu makes only a passing reference to a conventional GPS navigational system, but does not suggest retransmission of a GPS signal. As noted above, Kawano et al. does not provide any of the missing teachings lacking in the two base references. Kawano et al. is just a signal booster with no reference to GPS repeating. As such, the three reference combination of Karabinis '332/Seumitsu/Kawano et al. does not render obvious the methods of claims 10-13. Claims 23, 24 and 26 recite a GPS repeater system that includes a primary repeater for receiving a GPS signal, a downconverter for downconverting the GPS signal to IF, an amplifier for upconverting the IF signal to a radiofrequency signal. Those claims also recite a broadcast antenna for retransmitting the RF signal inside the structure.

With respect to claims 1 and 16, the combination of Karabinis '332/Seumitsu does not render obvious a GPS repeater system including a downconverter for downconverting GPS to an intermediate frequency signal, an amplifier for amplifying the IF signal, an upconverter for upconverting the IF signal to an RF signal, and a broadcast antenna for retransmitting the signal inside the structure. For those same reasons, claims 23, 24, and 26 are not rendered obvious by Karabinis '332/Seumitsu/Kawano et al.

Claims 27-30 recite a GPS repeater, including a link antenna for receiving the GPS signal, a downconverter for downconverting the GPS signal to an intermediate frequency signal, an amplifier for amplifying the RF signal and an upconverter for upconverting the RF signal to a second GPS signal, which is retransmitted by a broadcast antenna inside of a structure. For the same reasons as those noted above with respect to claims 1, 16 and 23 the combination of the three cited references does not in any way render obvious claims 27-30. The references fail to teach or suggest to a person of ordinary skill in the art not only why they would try to combine the references but how the references would even be combined or modified to yield the present invention.

The Examiner is very well aware that a hindsight gathering of various different pieces to somehow stick those pieces together without a teaching, reason, or motivation for doing so, is not a proper rationale for a *prima facie* case of obviousness under §103. In the present case, even if various pieces from the three references are gathered together, they would fall short of teaching the invention as recited in those rejected claims. Accordingly, claims 2, 3, 10-13, 17-18, 21-24, and 26-30 are also allowable over the cited art.

Rejection of Claims 4, 5, 7-9, 14-15, 19-20, 25, 31-35

The above-noted set of claims is rejected not only over a three reference combination of Karabinis '332/Seumitsu /Kawano et al., but also as further modified by Karabinis et al. '437.

The Examiner states that Karabinis '332/Seumitsu /Kawano et al. discloses the inventions as disclosed in claims 2, 17, and 23. Claims 2 and 17 have been canceled, but their respective independent claims 1 and 16 have been amended to recite the limitations that had been in those dependent claims. For the reasons noted above, claims 1, 16 and 23 are clearly not rendered obvious by the three reference combination. The Karabinis et al. '437 reference is cited merely to disclose an RF signal that is an unlicensed frequency signal. The Karabinis et al. '437 reference does not provide any of the teachings missing from the other three reference combination, such that a combination of the four references would render obvious the invention as recited in claims 1, 16 and 23.

There is no overall teaching to a person of ordinary skill in the art provided by the four very different references to somehow combine those references and modify the base Karabinis '332 reference to somehow yield the GPS repeater invention. There is no motivation of why the base reference would be modified and no teaching of how that base reference might be modified to yield the invention. Claims 4-5, 19-20, and 25, depend from claims 1, 16 and 23 and recite all the limitations therein in addition to other limitations not taught by the cited art. Therefore, those claims are all allowable over that art.

With respect to independent claim 7, the Examiner again argues that various pieces from the four references can be somehow combined to render obvious claim 7. However, the Examiner does not provide any teaching in any of those references that would teach a person of ordinary skill in the art how the references could be combined to yield the invention as recited in claim 7 for the same reasons.

Accordingly, claim 7 is also allowable over that four reference combination, as are claims 8 and 9, which recite the limitations of claim 7, as well as a unique combination of elements not taught by the four reference combination.

With respect to claim 14, the Examiner provides a similar line of argument as is provided with claim 7 and other of the independent claims. That is, four very different references are cited to find bits and pieces of the invention and somehow put those pieces together to yield the present invention. Again, there is no teaching or motivation to combine these four references to yield the present invention. As such, claims 14 and 15 each recite unique combinations of elements not cited by the present invention and, as such, claims 15 and 16 are allowable.

With respect to claim 30, that claim depends from the allowable claim 27 and thus is also allowable.

With respect to independent claim 31 and the dependent claims 32-35, the Examiner utilizes a similar rationale, as discussed above, to somehow yield the present invention. Again, there is no teaching or motivation to combine these four references to yield the present invention. As such, independent claim 31 and dependent claims 32-35 each recite unique combinations of elements not cited by the present invention and, as such, are allowable. Furthermore, with respect to various of the limitations recited in claims 32-35, the Examiner simply takes official notice without reciting to any art of record to support a conclusion. This is clearly improper with respect to establishing a case of obviousness. Therefore, claims 32-35 are also allowable.

Claims 37-38 and 43-44 are rejected under §103 over Karabinis '332 and Seumitsu. Those claims have been canceled and, as such, rejection of same is moot.

Claims 39-40 and 45-46 are rejected over Karabinis '332/Kawano et al./Karabinis et al. '437. Claims 39-40 and 45-46 have also been canceled and, as such, rejection of same is moot.

Claims 41 and 47 are rejected over Karabinis. The Examiner cites to Karabinis but then takes official notice with respect to the limitations cited in claims 41 and 47. Claim 41 depends from allowable claim 36 and claim 47 depends from allowable claim 42. For the reasons discussed hereinabove, claims 41 and 47 are allowable over Karabinis alone, as well as in combination with the combination of references cited herein.

CONCLUSION

Applicant submits that the currently pending claims are in an allowable form and, therefore, requests a Notice of Allowability of the application at the Examiner's earliest convenience. If any issues remain in the case which might be handled in an expedited fashion, such as through a telephone call or an Examiner's Amendment, the Examiner is certainly encouraged to telephone the Applicant's representative or to issue an Examiner's Amendment.

Applicant authorizes the fee of \$110.00 for a one-month extension of time in which to file this Response to be charged to Deposit Account 23-3000. The Applicant knows of no other fees due herein with this submission. However, if any additional charges or any credits are necessary, please apply them to Deposit Account 23-3000.

Respectfully submitted,

WOOD, HERRON & EVANS, L.L.P.



Kurt A. Summe
Reg. No. 36,023

2700 Carew Tower
Cincinnati OH 45202
(513) 241-2324 (voice)
(513) 421-7269 (facsimile)